

Energy Transformations



The background is a dark blue book cover. A bright blue horizontal line runs across the top, and another runs across the bottom. In the center, there is a faint, stylized illustration of a green plant with several long, pointed leaves.

**Energy can
change forms**

When a roller coaster starts, it has only potential energy. As it moves, this is changed to kinetic energy, and sometimes back into potential energy.

© 2000 Joe Schwartz
www.joyrides.com





**Let's look at
a ski jumper.**

When the skier is at the top of the hill, what type of energy does he have?

He has only potential energy. He has no kinetic energy.



When he starts going down the hill, what happens to some of his potential energy?

It is changed to kinetic energy as he moves down the ramp.



When he takes off from the ramp, what happens to his energy?

Some of his kinetic energy changes into potential energy as he rises higher in the air.



How could the ski jumper give himself even more potential energy?

Hint:

Potential Energy = mass x 9.8 x height

Either raise his starting height or add more mass.



When the skier lands and has stopped moving, does he have any potential energy?

Yes, there's chemical potential energy in the food she has eaten.





How you know you suck at skiing.

Remember the forms of energy:

- Mechanical
- Electrical
- Chemical
- Heat
- Light
- Sound
- Nuclear

What kind of energy conversion takes place when we light a match?

Hint: One turns into two.

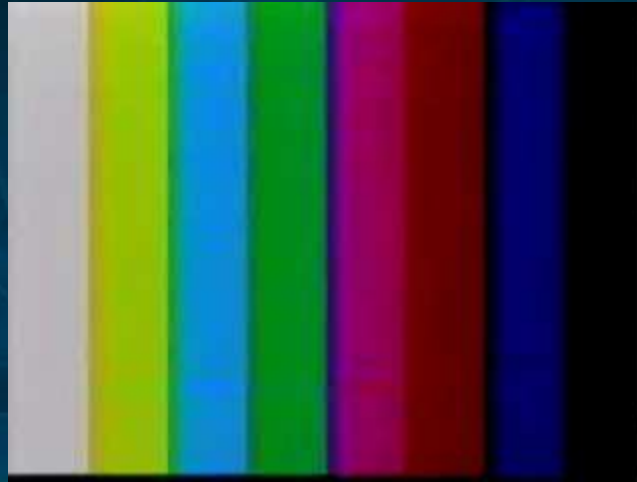


First of all, what kind of energy does a match have?

Chemical (potential)

The chemical energy is changed into heat energy and light energy.





Lighting a grill with liquid oxygen.

What kind of energy conversion takes place when we light fireworks?

Hint: One turns into three.



First of all, what kind of energy do fireworks have?

Chemical (potential)

The chemical energy is changed into heat energy, light energy and sound energy.





Fireworks factory explodes.

What kind of energy conversion takes place in a light bulb?

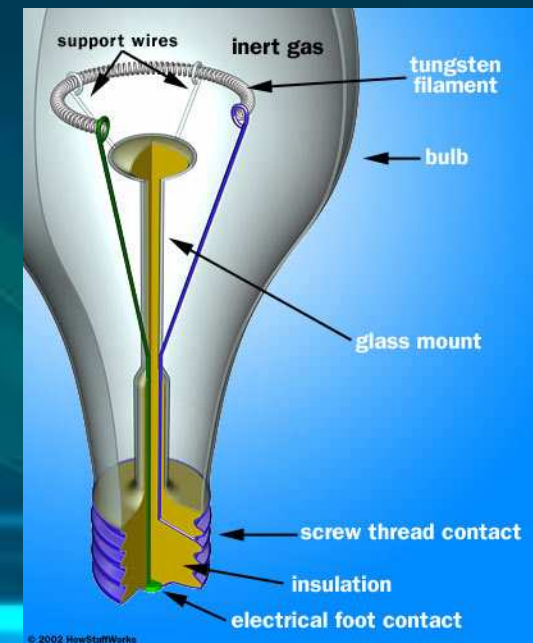
Hint: One turns into two



First of all, what kind of energy do light bulbs start with?

Electrical

The electrical energy is changed into heat energy and light energy.





What kind of energy conversion takes place in a car engine?

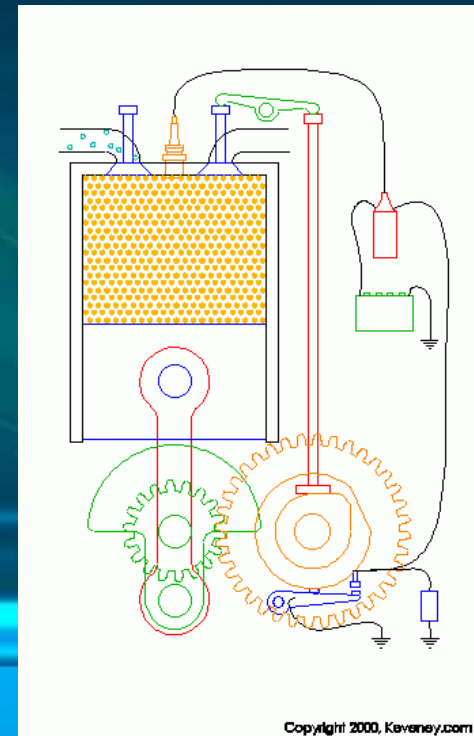
Hint: One turns into three.

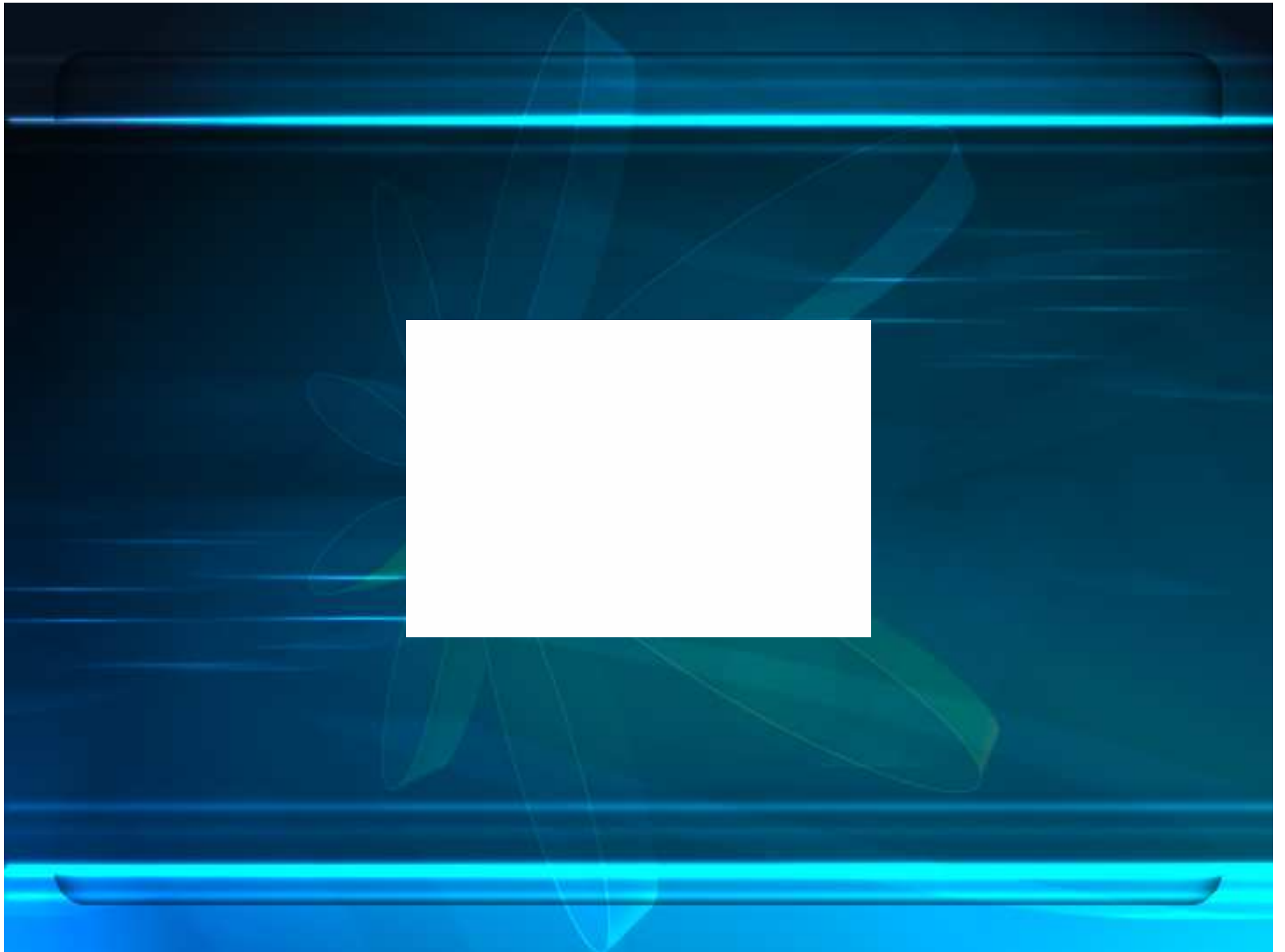


First of all, what kind of energy do car engines start with?

Chemical (potential) in gasoline

The chemical energy is changed into mechanical energy, heat energy and sound energy.





What kind of energy conversion takes place when a bullet is fired?

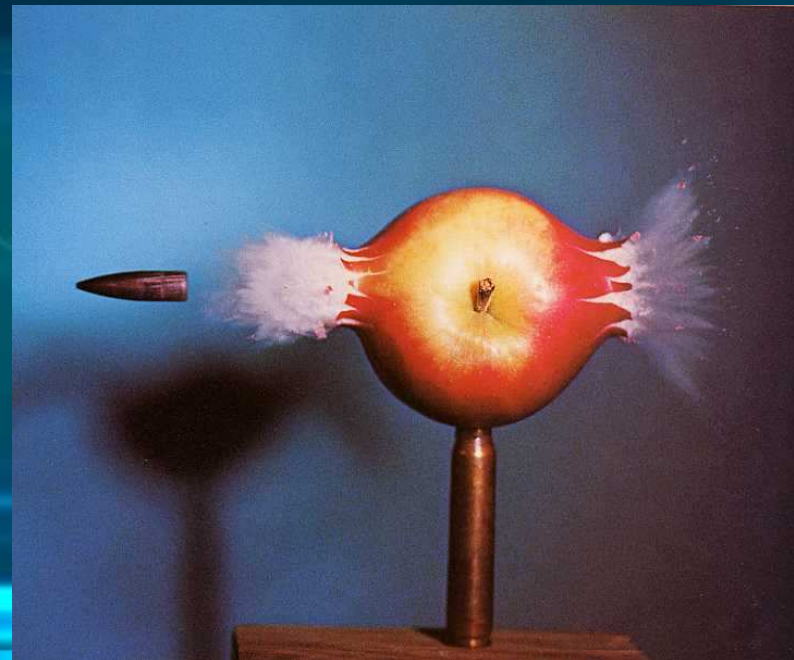
Hint: One turns into three.



First of all, what kind of energy do guns start with?

Chemical (potential)

The chemical energy is changed into mechanical energy, sound energy, and heat energy.





A bullet hitting a wine glass.



A 30mm machine gun.

What kind of energy conversion takes place when you kick a ball across the grass?

Hint: One turns into two.



First of all, what kind of energy does a kicked soccer ball have?

Mechanical (kinetic)

The mechanical energy is changed into heat energy (friction across the grass) and sound energy.



**Remember, the total
amount of energy
remains the same in
every example!**

**The mechanical energy of the soccer
ball = the heat energy of friction + the
sound energy.**



That's not the ball.